

the Jemez Mountains of New Mexico. It has been proposed that these three species partition their nesting habitat based on vegetation characteristics that are correlated with their body sizes. From this proposed relationship, we would predict that the accipiter hawks would show preference for nesting habitat in which their body size is (1) positively correlated with stand size class and basal area; and (2) inversely correlated with stand tree density and stand percent canopy closure. To evaluate these predictions, we conducted a 2-yr preference study of accipiter habitat using a landscape approach. A Landsat classification was conducted to provide habitat availability data for the study area and these data were compared to the nest site data to analyze species preference for forest cover type, percent canopy closure, slope, aspect and thermal reflectance. Size class and basal area preference were determined through comparison of random-point locations and nest sites. Nesting habitat characteristics for the three accipiters overlapped greatly. Areas of suitable nesting habitat were determined from areas of use and preference for all habitat layers for each species. Quantity of suitable habitat in the Jemez Mountains was examined for all three species and nesting habitat limitation is discussed.

NEST-SITE SELECTION OF GOSHAWKS IN SOUTHCENTRAL WYOMING

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Little is known regarding nest-site selection of northern goshawks (*Accipiter gentilis*) in lodgepole pine (*Pinus contorta*) forests. In 1992, we studied nest-site selection of goshawks (39 active pairs) in lodgepole pine forests of southcentral Wyoming, Medicine Bow National Forest. We described the nesting habitat of goshawks at three spatial scales—nest tree, nest-tree area (0.04-ha circle centered at nest tree), and nest area (homogeneous forest stand surrounding nest). Nest-site habitat characteristics were compared to those randomly available. Goshawks selected the largest nest trees available. Nest trees were larger ($P < 0.001$) in dbh than average trees in either the nest-tree area or nest area. Nest trees were taller ($P < 0.001$) and larger ($P < 0.001$) than random trees on the study area. Dbh of nest trees ranged from 17.0–50.5 cm ($\bar{x} = 31.6$ cm, SE = 1.3). Slopes at goshawk nests were more ($P = 0.04$) moderate (11%, SE = 1.1, range 1–34%) compared to those randomly available (16%, SE = 2.1). Aspects at goshawk nests were similar ($P = 0.61$) to those randomly available. Nest areas used by goshawks differed from those ($P < 0.001$) randomly available. Tree density in goshawk nest stands was lower (1299 trees/ha) than a sample of random stands (1562 trees/ha, $P = 0.045$). However, nest areas had a higher ($P < 0.001$) density of large trees (475.3

trees/ha, SE = 17.2, vs. 315.8 trees/ha, SE = 20.1). Trees in nest areas were also taller (mean = 20.2 m, SE = 0.4, $P < 0.001$) with greater ($P = 0.006$) heights to live canopy. The density of small trees at nest areas (212.9 trees/ha, SE = 25.3) was less ($P = 0.001$) than half those present in random stands (452.5, SE = 68.2). Nest areas were not “old-growth” in the classic sense of being multistoried stands with large diameter trees, high canopy closure, and large dead and down woody debris. Rather, nest areas were in even-aged, single-storied, mature forest stands with high canopy closure (mean 65%, SE = 1.4) and clear forest floors.

NORTHERN GOSHAWK HABITAT ASSOCIATIONS, USE AREAS AND JUVENILE DISPERSAL ON THE TONGASS NATIONAL FOREST, ALASKA

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We used aerial radiotelemetry to assess habitat associations and the size of areas used by adult and juvenile northern goshawks (*Accipiter gentilis*) during nesting and post-nesting seasons within the temperate rainforest of the Tongass National Forest, southeast Alaska. This information is being used to assist with the development of management guidelines for maintaining goshawk habitat across the Tongass National Forest. A total of 51 goshawks were radiotagged and followed from 1992–94, including 24 juveniles. Total areas used in 1992–93 by adult goshawks varied from 769–141 240 ha indicating that concepts such as mean home range size do not currently apply because of the extreme individual variability. The size of areas used by adult goshawks during the brood-rearing period varied from 728–19 408 ha for males ($N = 9$) and 273–111 410 ha for females ($N = 8$). The number of relocations varied from 8–50 per bird making interpretation of home range sizes difficult. The large brood-rearing areas used by two females were the result of nest abandonment during the fledgling-dependency period. Adults were nonmigratory. Adult males generally maintained year-round areas of use loosely associated with the nest area. Some adult females vacated the nesting area and had fall/winter use areas distinct from their nesting area. Of seven radiotagged adult females that re-nested in subsequent years, two nested near their previous year's nest, and five selected new mates and moved 4 km, 11 km, 26 km, 27 km, and 43 km to another nest area. Documented juvenile dispersal distances through mid-winter 1993/94 ranged from 16–151 km. Aerial estimates of habitat use based on 667 relocations from 30 goshawks indicated that 89% were judged to be in old-growth coniferous forests.